Washington University in St. Louis

SCHOOL OF LAW

Interdisciplinary Environmental Clinic

July 20, 2015

Mr. Stephen Hall
Chief, Air Quality Analysis Section
Missouri Department of Natural Resources
Air Pollution Control Program
P.O. Box 176
Jefferson City, MO 65102
Via email to: cleanair@dnr.mo.gov

Re: 2015 Monitoring Network Plan

Dear Mr. Hall:

On behalf of the Sierra Club, we urge the Missouri Department of Natural Resources ("DNR") to revise the proposed 2015 Monitoring Network Plan[1] in order to satisfy the requirements of the Clean Air Act. In particular, DNR should refrain from proposing new sulfur dioxide ("SO_2") monitoring sites near Ameren's Labadie power plant until EPA completes an area designation for the plant. Monitors near Labadie should be sited based on the modeling that is used to determine the nonattainment area boundary, which will identify areas of expected peak ambient SO_2 concentrations around the plant based on current EPA guidance. Should DNR persist in proposing new SO_2 monitoring sites near the Labadie plant in the 2015 Monitoring Network Plan, then based on currently-available modeling, one of the two proposed new monitoring sites near the plant is not located in an area where peak SO_2 concentrations are expected to occur and should be relocated. A third monitoring site should also be added southeast of the plant. Similarly, based on currently-available modeling, two of the three proposed new monitoring sites near Ameren's Rush Island plant are not located in areas where peak SO_2 concentrations are expected to occur and should be relocated.[2] These changes are necessary to ensure that the Labadie and Rush Island monitors capture maximum ambient SO_2 concentrations near these large sources.

This letter highlights the following key points:

- It is premature to site and install new SO_2 monitors at the Labadie plant until EPA completes an area designation for the plant.
- While DNR plans to use the proposed new Labadie and Rush Island monitors as State and Local Air Monitoring Stations ("SLAMS"),[3] it is not submitting them for EPA approval as required for SLAMS.

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[1] MO DEP'T OF NATURAL RES. AIR POLLUTION CONTROL PROGRAM, 2015 MONITORING NETWORK PLAN, June 12, 2015 ("2015 Monitoring Network Plan").

[2] The three proposed new SO_2 monitoring sites that should be relocated, as discussed more fully below, are the Valley site near Ameren's Labadie plant and the Natchez and Weaver-AA sites near Ameren's Rush Island plant.

[3] 2015 Monitoring Network Plan at 12.

- Based on currently-available modeling, one of the two proposed new Labadie monitoring sites and two of the three proposed new Rush Island monitoring sites are unlikely to capture maximum ambient SO_2 concentrations because they are not located in areas where peak SO_2 concentrations are expected to occur.
- DNR has not adequately justified the locations of the proposed new Labadie and Rush Island monitoring sites. The support offered for the monitoring site locations in DNR's plan was provided by Ameren (Appendices 2 and 4). DNR visually observed the proposed sites at both plants but only performed independent modeling - which does not entirely support Ameren's proposed locations - regarding the Rush Island sites (Appendix 5). DNR did not perform independent modeling regarding the Labadie sites.

I. DNR Should Refrain From Proposing New SO_2 Monitoring Sites Near Ameren's Labadie Plant Until EPA Completes An Area Designation For The Plant.

It is premature to determine SO_2 monitoring site locations near the Labadie plant. DNR is about to propose a nonattainment area boundary recommendation for the Labadie plant,[4] and EPA must make a final area designation for the plant by July 2016.[5] While the Ameren modeling used to site the Labadie monitors in the 2015 Monitoring Network Plan was performed in a manner inconsistent with current EPA guidance, the modeling used to determine the nonattainment area boundary will identify areas of peak ambient SO_2 concentrations around the plant using current EPA guidance. It is likely that the Labadie monitors will ultimately be used to determine whether the nonattainment area comes into attainment, and they must be properly sited in order to provide reliable data.

The only modeling offered to support the proposed new Labadie monitoring sites was performed by Ameren in 2012.[6] Whereas DNR performed independent modeling to assess Ameren's proposed Rush Island monitoring sites (discussed in III.B. below), DNR did not perform independent modeling to assess Ameren's proposed Labadie monitoring sites. The 2015 Monitoring Network Plan states that DNR conducted "a review of relative dispersion modeling, local meteorological evaluation methodology submitted by Ameren UE, historical departmental SLAMS SO_2 monitoring data, nearby meteorological stations, and local topography."[7] However, only Ameren's modeling pointed to the proposed monitor locations. The other information either pointed to different locations or supported no particular monitoring site location. For example, the historical analysis of the former Augusta and Augusta Quarry monitors concluded where *not* to place monitors,[8] but did not point to a location that would accurately represent the highest ambient SO_2 concentration near the Labadie plant.[9] In addition, the analysis of wind

[4] DNR has announced that it will propose a Labadie designation by July 27, 2015.
[5] Sierra Club v. Gina McCarthy, No. 3:13-cv-3953-SI (Consent Decree, March 2, 2015).
[6] 2015 Monitoring Network Plan, Appendix 3.
[7] 2015 Monitoring Network Plan at 14.
[8] The Augusta Quarry data analysis suggests that the plant was responsible for high concentrations near the quarry. *Id.* at 15-19. Without comparative conditions between current proposed monitor locations and the historical monitor locations, the historical data is irrelevant to locating the proper sites for new monitors.
[9] *Id.*

direction through the valley points to placing monitor(s) either to the northeast or southwest of the plant,[10] but it is too vague to support any specific monitoring site location.

The reliance upon Ameren's modeling would not be so concerning if Ameren had proposed monitors in locations with the highest modeled SO_2 concentrations around Labadie. However, one of Ameren's two proposed monitoring sites is outside any of the three areas where its modeling predicted peak SO_2 concentrations are expected to occur, leaving two of the three peak concentration areas completely unmonitored. In addition, Ameren's modeling does not comport with EPA guidance.

In sum, DNR should not propose any Labadie monitoring sites until EPA completes an area designation for the plant because 1) DNR will have to perform modeling that comports with EPA guidance as part of the Labadie designation process; 2) DNR intends to use the Labadie monitoring data in assessing whether the nonattainment area ultimately comes into attainment;[11] and 3) the Clean Air Act requires that monitors sited for National Ambient Air Quality Standard ("NAAQS") compliance purposes be incorporated into the state's monitoring network, subject to EPA review and approval.[12]

II. DNR Should Seek EPA Approval For The Proposed New Labadie And Rush Island SO_2 Monitors Because It Intends To Use Them As SLAMS.

The 2015 Monitoring Network Plan adds two new SO_2 monitors near Ameren's Labadie plant[13] and three new SO_2 monitors near Ameren's Rush Island plant.[14] The plan labels these as Special Purpose Monitors ("SPMs"), but states that "it is the intention to convert these monitors to SLAMS" once EPA finalizes the proposed Data Requirements Rule.[15]

Because DNR plans to use data from these new monitors to assess compliance with the 2010 1-hour SO_2 NAAQS, and because the Rush Island monitors are part of the Jefferson County Nonattainment State Implementation Plan ("SIP"), the siting of these monitors should be subject to EPA approval as required for SLAMS.[16] Indeed, it is unclear why the 2015 Monitoring Network Plan does not formally propose these new monitors as SLAMS.

Ameren proposed the Labadie monitoring sites to DNR and then constructed and began operating them just before the 2015 Monitoring Network Plan was published.[17] DNR approved the Labadie monitoring sites without conducting an independent modeling analysis to determine whether they are located in areas where peak SO_2 concentrations are expected to occur, without

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[10] *Id.* at 19-20.
[11] 2015 Monitoring Network Plan at 12.
[12] Clean Air Act § 110 (a)(2)(B), 42 U.S.C. § 7410(a)(2)(B); 40 CFR § 58.10.
[13] 2015 Monitoring Network Plan at 12-21.
[14] *Id.* at 22-23.
[15] EPA expects to publish the final Data Requirements Rule in October 2015. http://yosemite.epa.gov/opei/rulegate.nsf/byRIN/2060-AR19.
[16] 40 C.F.R. § 58.10(a)(2) and (e).
[17] DNR approved Ameren's proposed Labadie monitoring sites on May 1, 2015, and published the 2015 Monitoring Network Plan on June 12, 2015.

providing for public notice and comment, and without submitting the proposed monitor locations to EPA for its review and approval.

With respect to Rush Island, DNR submitted the Jefferson County Nonattainment SIP to EPA for review and approval on or about June 1. While it contained the requirement for Ameren to propose, build, and operate SO_2 monitoring sites at Rush Island, it did not identify the proposed Rush Island monitoring sites included in the 2015 Monitoring Network Plan published 11 days later on June 12, 2015.

Given DNR's stated intention to convert these monitors to SLAMS once EPA finalizes the proposed Data Requirements Rule – which it is expected to do in the next few months – the only salient difference between proposing them as SPMs rather than SLAMS in the 2015 Monitoring Network Plan is that EPA does not have to approve their locations. If DNR were to propose them as SLAMS in the 2015 Monitoring Network Plan or simply wait a few months and propose them as SLAMS after the final Data Requirements Rule is published, EPA *would* have to approve their locations. Proposing them as SPMs now when they will likely be converted to SLAMS in just a few months is suspect because, practically, it will be more difficult for EPA to object to the poor siting of the monitors and require that they be relocated after they are in operation.

The purpose of the NAAQS is to protect the public health.[18] Therefore, NAAQS compliance decisions must be based on properly-sited monitors designed to record maximum ambient SO_2 concentrations. Because one of the proposed new Labadie monitoring sites and two of the proposed new Rush Island monitoring sites are not located in areas of anticipated maximum ambient SO_2 concentrations (based on currently-available modeling), those monitors should be relocated – regardless of whether they are currently labeled SPMs or SLAMS. And EPA should notify DNR and Ameren that it will not accept data from those monitors for NAAQS compliance purposes unless they are appropriately relocated. Moreover, EPA should notify DNR and Ameren that it is premature to determine appropriate monitoring site locations for the Labadie plant until it completes an area designation for the plant.

III. Based On Currently-Available Modeling, Three Of The Five Proposed New Labadie And Rush Island Monitoring Sites Are Not Located In Areas Of Anticipated Maximum Ambient SO_2 Concentrations.

EPA regulations and guidance require ambient SO_2 monitors to be sited where peak concentrations are expected to occur.[19] With respect to source-oriented SO_2 monitoring, EPA guidance states:

> The primary objective is to place monitoring sites at the location or locations of expected peak concentrations.[20]

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[18] Clean Air Act § 109(b)(1), 42 U.S.C. § 7409(b)(1).
[19] 40 C.F.R. Part 58, Appendix D, § 1.1.1(a), (c). See also U.S. EPA: OFFICE OF AIR AND RADIATION, OFFICE OF AIR QUALITY PLANNING AND STANDARDS, AIR QUALITY ASSESSMENT DIVISION, SO_2 NAAQS DESIGNATIONS SOURCE-ORIENTED MONITORING TECHNICAL ASSISTANCE DOCUMENT, Dec. 2013 ("SO_2 Monitoring TAD").
[20] SO_2 Monitoring TAD at 16.

Further, the Consent Agreement between DNR and Ameren that is included in both the Jefferson County SIP and the 2015 Monitoring Network Plan requires that the monitoring at Rush Island "represents ambient air quality in areas of maximum SO_2 impact from the Rush Island Energy Center."[21]

However, one of the two proposed new Labadie monitoring sites and two of the three proposed new Rush Island monitoring sites are not located in the areas where peak SO_2 concentrations are expected to occur based on Ameren's and DNR's modeling.

On behalf of the Sierra Club, we previously critiqued Ameren's proposed Labadie and Rush Island monitoring site locations in letters submitted to DNR. Those letters are attached as Exhibits 1 and 2 and hereby incorporated by reference.

A. Based On Currently-Available Modeling, One Of The Two Proposed New Labadie Monitoring Sites Should Be Relocated, And A Third Monitor Should Be Added Southeast of the Plant.

In our April 13, 2015 comments to DNR on Ameren's proposed new Labadie monitoring sites, attached as Exhibit 1, we demonstrated that one of the proposed sites – the Valley site – is not located in any of the areas where Ameren's modeling predicts peak SO_2 concentrations are expected to occur. Ameren's modeling identified three distinct areas where the highest SO_2 concentrations are expected to occur and where high concentrations are expected to occur most frequently. These areas are located northwest, northeast, and southeast of the plant and are shown in Figure 1 below. However, only one of the two proposed Labadie monitoring sites – the Northwest site – is located in one of these peak concentration areas (the one located northwest of the plant). The Valley site is located between the other two peak concentration areas, in an area where the modeled concentration is only about 80 percent of the maximum concentration predicted by the model. As a result, it is unlikely to capture maximum ambient SO_2 concentrations and should be relocated to the peak concentration area northeast of the plant.

In addition, DNR should also require the installation of a third monitor in the peak concentration area southeast of the plant lest anticipated maximum ambient SO_2 concentrations in this area – which are likely to have implications for NAAQS compliance – go undetected by the Labadie SO_2 monitoring network.

B. Two Of The Three Proposed New Rush Island Monitors Should Also Be Relocated.

In our May 29, 2015 comments to DNR on Ameren's proposed new Rush Island monitoring sites, attached as Exhibit 2, we demonstrated that all three of the proposed sites, but especially the Natchez and Weaver-AA sites, are located outside areas where Ameren's modeling predicts peak SO_2 concentrations are expected to occur. DNR has since performed an independent modeling evaluation of the proposed sites which follows EPA guidance more closely and is

[21] 2015 Monitoring Network Plan, Appendix 3, 2015 Ameren Missouri and Missouri Department of Natural Resources Consent Agreement, Appendix A, ¶ b, at 13 of 15.

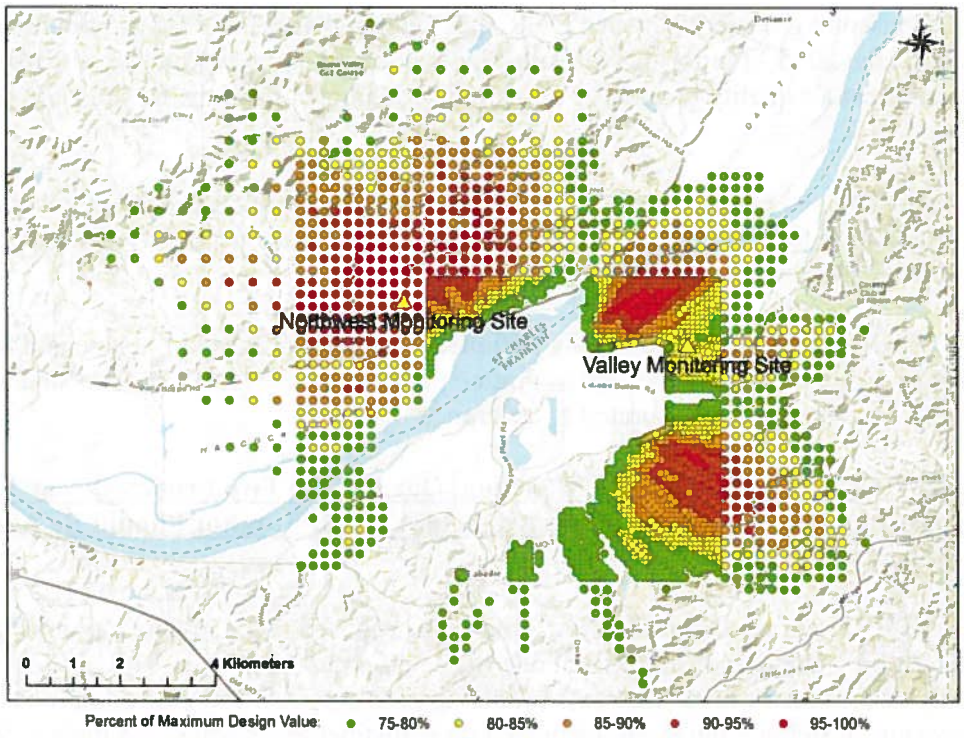

Figure 1. Modeled peak concentration areas near Ameren's Labadie plant.

therefore more reliable than Ameren's modeling. While DNR concluded that the proposed sites are properly located in areas where peak SO_2 concentrations are expected to occur, there is a significant flaw in DNR's analysis that, when corrected, confirms that the Natchez and Weaver-AA sites are located outside of peak concentration areas and should be relocated.

The stated purpose of DNR's evaluation of the proposed new Rush Island monitoring sites was to determine if the sites "will adequately represent Rush Island Energy Center's SO_2 air quality impact." DNR used hourly emission rates from EPA's Air Markets Program in its modeling as recommended in EPA's SO_2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document whereas Ameren used constant emission rates.[22]

However, DNR's analysis of its modeling is based on a methodology that inherently biases the results. DNR used a telescoping receptor grid in its modeling; specifically, it used a 100-meter receptor spacing out to 1 kilometer, a 250-meter spacing out to 3.5 kilometers, a 500-meter spacing out to 10 kilometers, and a 1,000-meter spacing out to 50 kilometers. In order to identify areas where peak SO_2 concentrations are expected to occur, it plotted the predicted SO_2 design value at each receptor and drew polygons around high concentration areas by including all receptors with concentrations greater than 90 ug/m^3. This is shown in Figure 2 below. DNR then

[22] However, neither Ameren nor DNR included interactive sources as recommended by EPA guidance. See Exhibit 2 at 9.

counted the number of high concentration receptors (i.e., receptors with concentrations greater than 90 ug/m^3) in each polygon and ranked the polygons from highest to lowest in terms of the number of high concentration receptors they contained. The results of this analysis are summarized in Table 1 below.

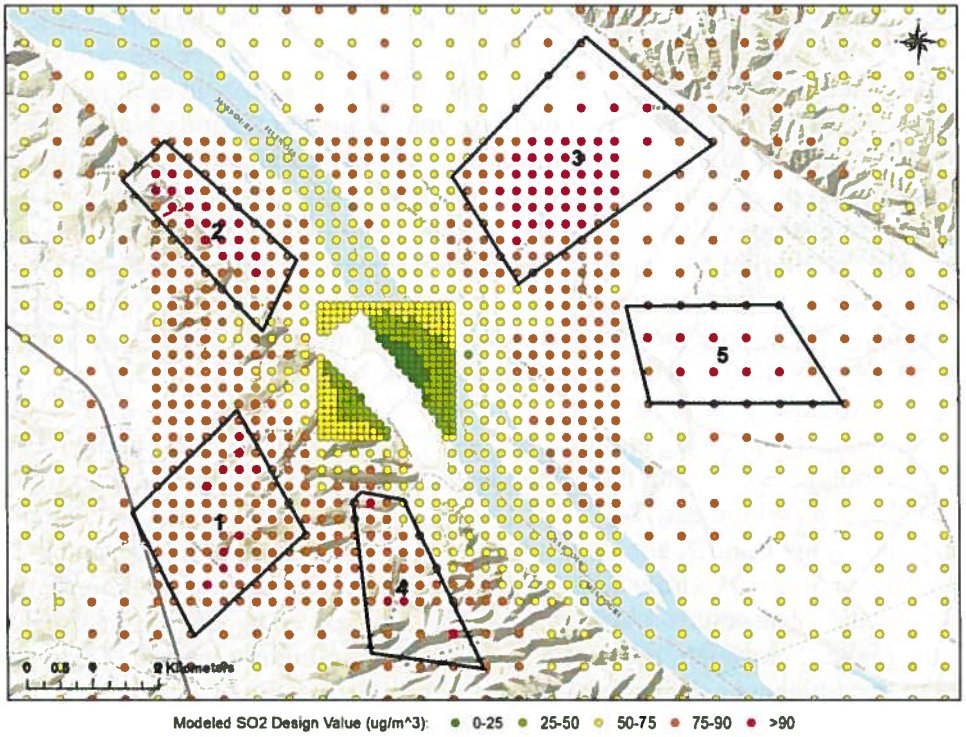

Figure 2. DNR model results and polygons drawn around high concentration areas.

Table 1. Number of high concentration receptors in DNR's polygons.

	Polygon 1	Polygon 2	Polygon 3	Polygon 4	Polygon 5
# of Receptors >90 ug/m^3	10	18	45	4	8
Ranking: 3>2>1>5>4					

Based on this analysis, DNR concluded that polygons 3 and 2, which contained the highest and second-highest number of high concentration receptors, represented "areas of maximum concentration" and were therefore "candidates for the location of SO_2 monitors."[23] It then determined, based on a qualitative analysis of wind speed and direction and the number of high

[23] 2015 Monitoring Network Plan, Appendix 5, Review of Proposed SO_2 and Meteorological Monitoring Stations Around Ameren Missouri's Rush Island Energy Center, at 4.

concentration receptors in the remaining three polygons (i.e., 1, 4 and 5), that polygon 1 was the best candidate of the remaining three for the location of a third SO_2 monitor. Based on these findings, DNR concluded that because the three new monitoring sites proposed by Ameren are located within polygons 1, 2 and 3, they are within areas where peak SO_2 concentrations are expected to occur and are therefore appropriately sited.

However, because DNR used a telescoping receptor grid, and because the polygons it drew to indicate areas of high concentration are located in a region where the receptor grid spacing varies from 250 to 500 meters, DNR's counts of high concentration receptors in each polygon and its subsequent ranking of the polygons based on those counts are significantly biased. Some of DNR's polygons are likely to have more high concentration receptors than others just by virtue of the fact that the receptors in those polygons are spaced more closely together than they are in other polygons. For example, almost all of the receptors in polygons 1 and 2 are spaced 250 meters apart, whereas all of the receptors in polygon 5 are spaced 500 meters apart. As a result there are many more receptors – including more high concentration receptors – in polygons 1 and 2 than in polygon 5 despite the fact that all three polygons are similar in size (polygon 5 is slightly larger than polygon 2 and slightly smaller than polygon 1).

One way to eliminate the counting bias resulting from DNR's use of a telescoping receptor grid is by ranking the polygons based on the percentage instead of the absolute number of high concentration receptors within each one. This effectively adjusts for the fact that certain polygons, e.g., polygons 1 and 2, are likely to have more high concentration receptors than others, e.g., polygon 5, just by virtue of the fact that the receptors in those polygons are spaced more closely together. The results of this analysis are summarized in Table 2 below. Polygon 3 is still ranked the highest. However, polygon 5 is ranked second-highest instead of polygon 2, which drops to third-highest – displacing polygon 1 from the top three.

Table 2. Percentage of high concentration receptors in DNR's polygons.

	Polygon 1	Polygon 2	Polygon 3	Polygon 4	Polygon 5
% of Receptors >90 ug/m^3	15	44	67	14	62
Ranking: 3>5>2>1>4					

A better way to eliminate the counting bias resulting from DNR's use of a telescoping receptor grid is to replace the telescoping grid with a uniform grid so the receptor spacing is the same in all five polygons. To determine how this would affect receptor counts and polygon ranks, we re-ran DNR's model using a uniform 250-meter receptor spacing and analyzed the results using DNR's methodology. The results are shown in Figure 3 below, and the number of high concentration receptors in each polygon and the ranking of polygons from highest to lowest in terms of the number of high concentration receptors they contain are summarized in Table 3 below. We also ranked the polygons based on the percentage instead of the absolute number of

high concentration receptors within each one. The results of this analysis are summarized in Table 4 below.

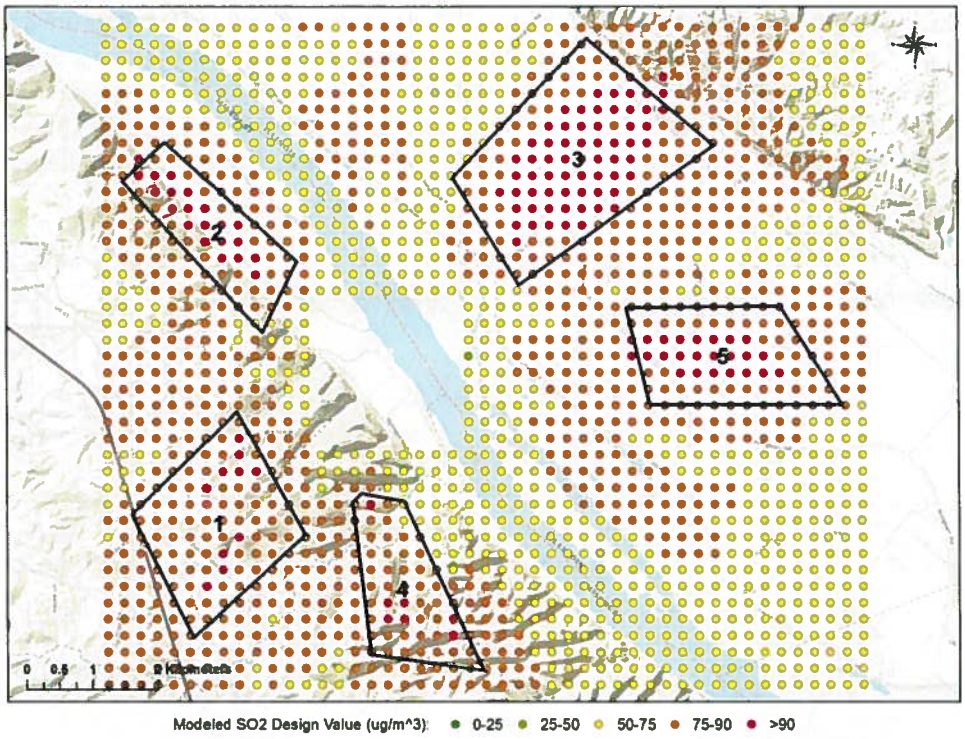

Figure 3. DNR model results for uniform 250-meter receptor grid.

Table 3. Number of high concentration receptors in DNR's polygons when modeled with a uniform receptor grid.

	Polygon 1	Polygon 2	Polygon 3	Polygon 4	Polygon 5
# of Receptors >90 ug/m^3	10	20	63	7	22
Ranking: 3>5>2>1>4					

Table 4. Percentage of high concentration receptors in DNR's polygons when modeled with a uniform receptor grid.

	Polygon 1	Polygon 2	Polygon 3	Polygon 4	Polygon 5
% of Receptors >90 ug/m^3	14	45	55	16	39
Ranking: 3>2>5>4>1					

When modeled with a uniform receptor grid, the three highest ranking polygons – both in terms of the number and percentage of high concentration receptors they contain – are 2, 3 and 5, **not** 1, 2 and 3 as DNR's flawed analysis concluded. These are the areas predicted to have the highest modeled impacts and thus where SO_2 monitoring sites should be located. An analysis of the top 10, 25, and 50 receptors supports this conclusion. All but one of the top 10 receptors are located within polygon 3, all but one of the top 25 receptors are located within polygons 2 and 3, and all but one of the top 50 receptors are located within polygons 2, 3 and 5. This is shown in Figure 4 below, which includes a filled contour plot of modeled design values that clearly shows how much larger the peak concentration areas are in polygons 2, 3 and 5 compared to the other polygons.

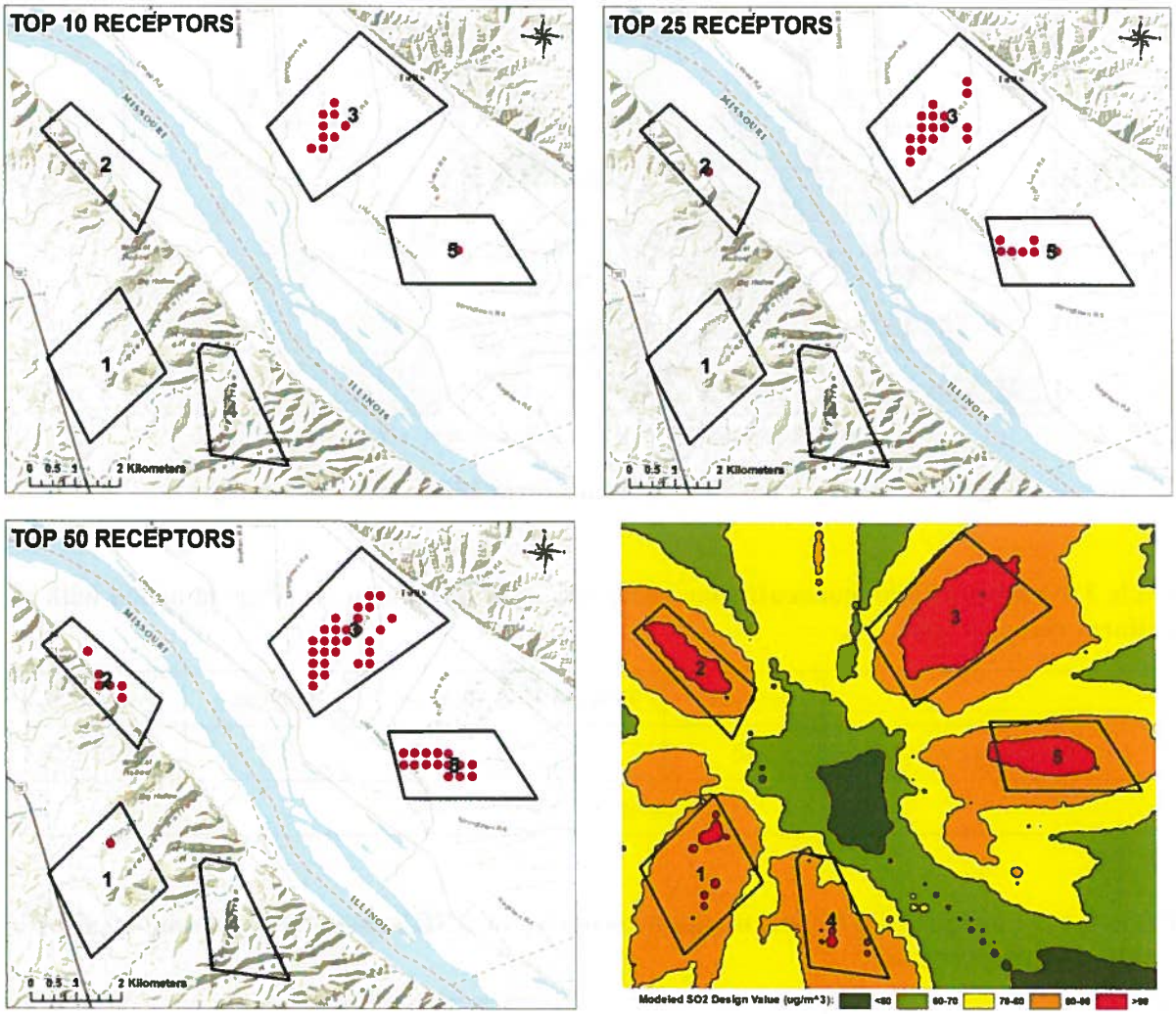

Figure 4. Top 10, 25 and 50 receptors and filled contour plot of modeled design values.

The locations of Ameren's proposed SO_2 monitoring sites – dubbed Fults, Natchez and Weaver-AA – relative to DNR's polygons are shown in Figure 5 below. Of the three proposed sites, only the Fults site, which is inside the peak concentration area within polygon 3, is properly located. The Weaver-AA site, which Figure 2 of Monitoring Network Plan Appendix 5 incorrectly shows being within polygon 2, is actually located outside of it based on the site coordinates provided in Plan Appendix 1. Hence it is not properly located. Nor is the Natchez site, which should be located within polygon 5 instead of polygon 1 because polygon 5 has higher modeled impacts.

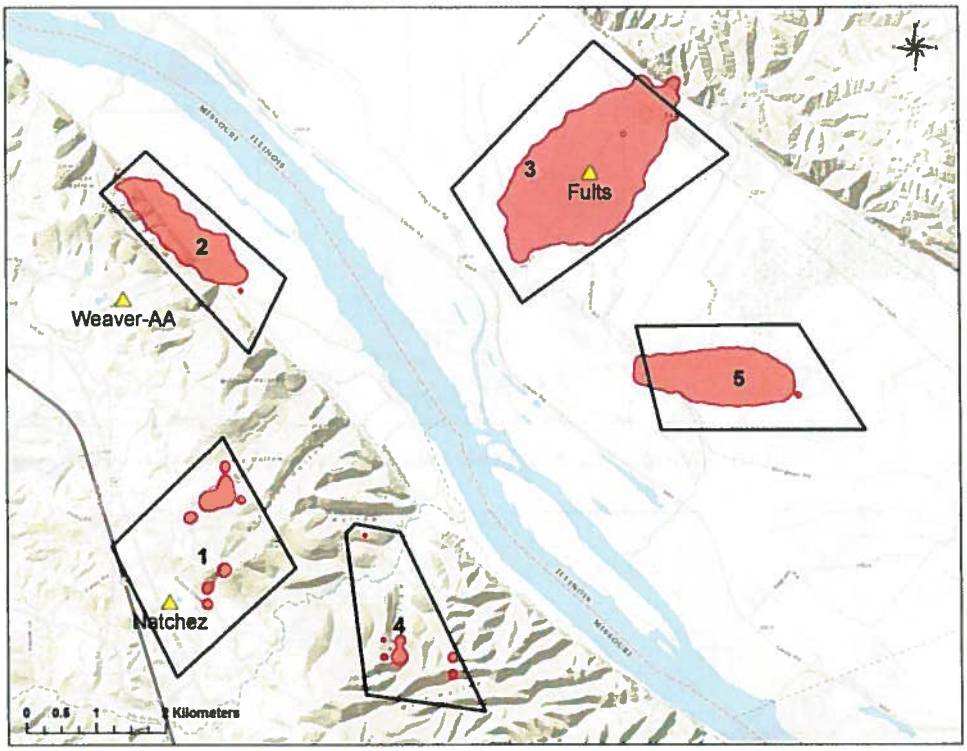

Figure 5. Ameren's proposed SO_2 monitoring sites relative to DNR's polygons. Peak concentration areas (>90 ug/m^3) are shaded red.

Because they are not properly located, neither the Natchez nor Weaver-AA monitoring sites will adequately represent Rush Island's SO_2 air quality impact. Therefore, both sites should be relocated. The Weaver-AA site should be located inside the peak concentration area within polygon 2 and the Natchez site should be located inside the peak concentration area within polygon 5 as shown in Figure 6 below. Alternatively, the Natchez site could be moved inside the peak concentration area within polygon 1 and a fourth monitor added inside the peak concentration area within polygon 5 as shown in Figure 7 below. The recommended monitor locations shown in Figures 6 and 7 are easily accessible and appear to meet EPA siting criteria and have ready access to power.

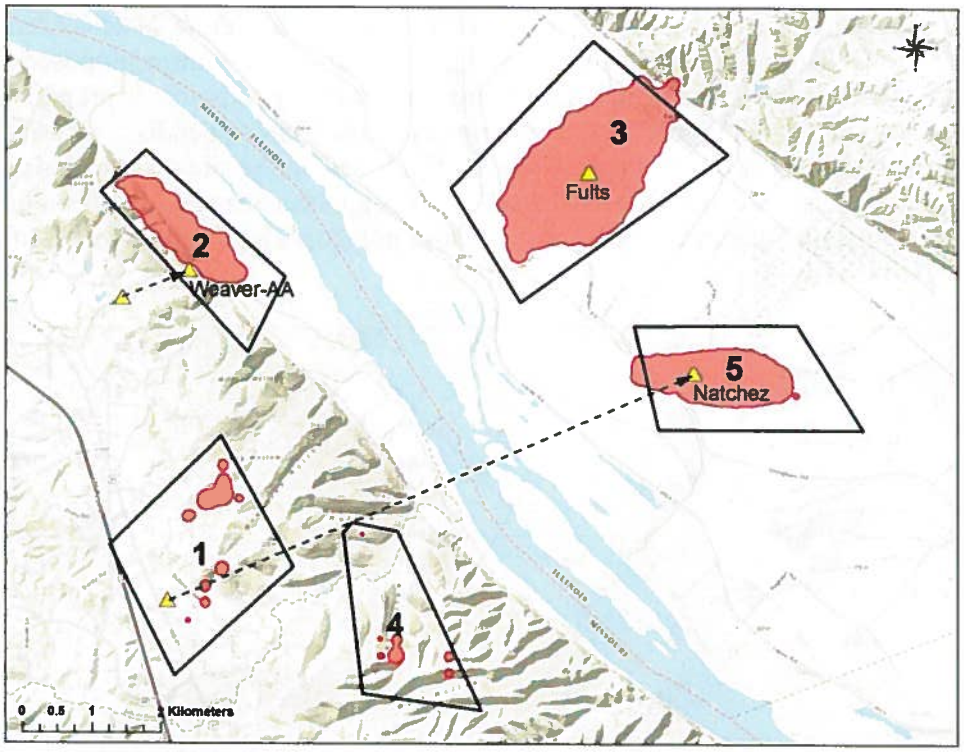

Figure 6. Appropriately located Rush Island monitors (three monitor configuration).

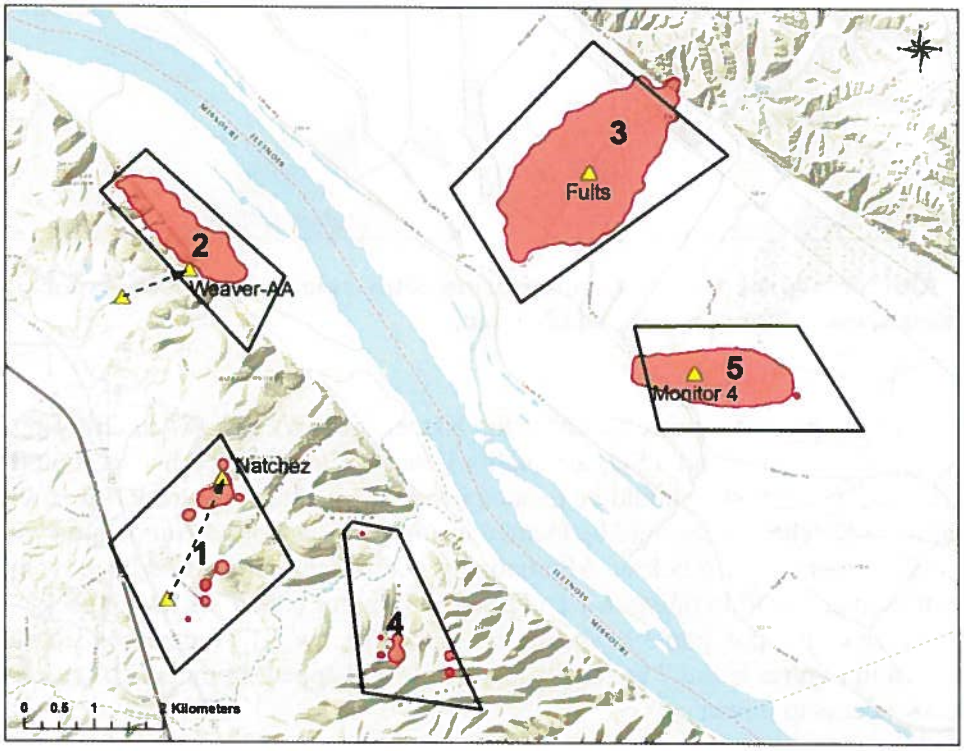

Figure 7. Appropriately located Rush Island monitors (four monitor configuration).

IV. Conclusion

For the reasons set forth above, DNR should withdraw the proposed Labadie SO_2 monitoring sites and EPA should not approve the 2015 Monitoring Network Plan with the inclusion of such sites pending the completion of the Labadie area designation process and the performance of appropriate modeling to determine the areas of peak ambient SO_2 concentrations around the plant using current EPA guidance. With respect to the Rush Island monitoring sites in the 2015 Monitoring Network Plan (and the Labadie monitoring sites if DNR does not withdraw them), DNR should not submit the plan to EPA, and EPA should not approve it, unless and until the proposed monitoring sites are relocated to areas of expected peak ambient SO_2 concentrations.

Sincerely yours,

Maxine I. Lipeles

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April 13, 2015

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Re: Comments on Ameren Missouri's Labadie Sulfur Reduction Project Quality Assurance Project Plan

Dear Ms. Maliro:

On behalf of the Sierra Club, we submit the following comments on Ameren Missouri's Labadie Sulfur Reduction Project Quality Assurance Project Plan (QAPP). The QAPP describes the methodology Ameren used to determine the locations of two proposed ambient sulfur dioxide (SO_2) monitoring stations around its Labadie Energy Center in connection with the 1-hour SO_2 National Ambient Air Quality Standard (NAAQS). We believe the QAPP should be disapproved because the proposed monitoring stations are improperly sited; they are outside areas where peak 1-hour SO_2 concentrations are expected to occur based on the modeling described in the QAPP. Furthermore, the modeling described in the QAPP does not comport with EPA guidance on characterizing ambient air quality in areas around or impacted by significant SO_2 emission sources such as the Labadie Energy Center and therefore may have failed to correctly identify areas of expected ambient, ground-level SO_2 concentration maxima.

I. Based on the Modeling Described in the QAPP, the Proposed Monitoring Stations are Improperly Sited Outside Areas Where Peak 1-Hour SO_2 Concentrations are Expected to Occur

Appendix 10 of the QAPP describes the modeling performed to determine the locations of the proposed ambient SO_2 monitoring stations around the Labadie Energy Center. The modeling was used to determine locations where peak 1-hour SO_2 concentrations are expected to occur due to the plant's SO_2 emissions given that the primary objective of source-oriented monitoring is to identify peak SO_2 concentrations in ambient air that are attributable to an identified emission source or group of sources.[1] Figure 1 shows all receptors with modeled design values greater than or equal to 75 percent of the maximum modeled design value. Figure 2 shows the receptors with the top 200, 100, 25, and 10 modeled design values.

[1] U.S. EPA, SO_2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document, at 2.

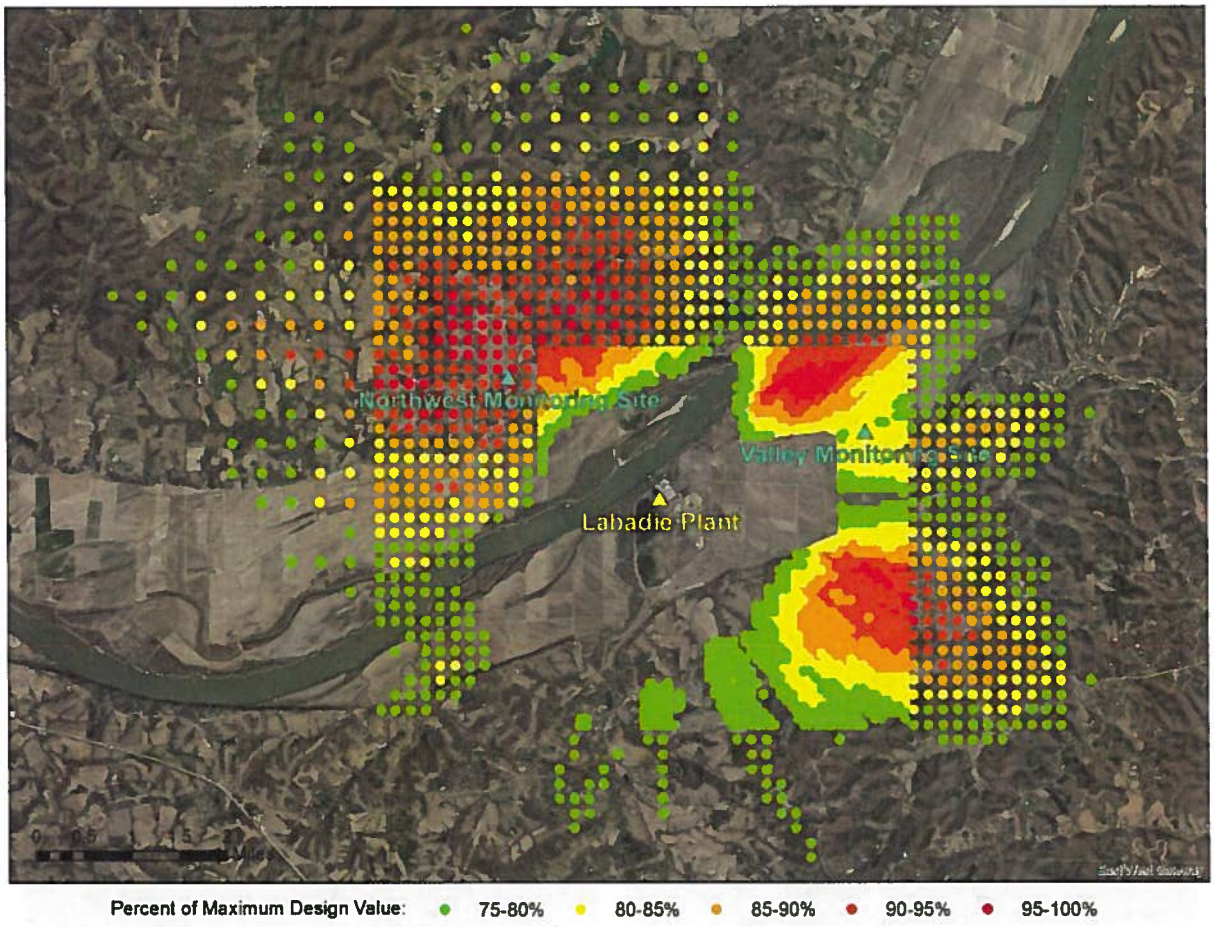

Figure 1. Receptors with modeled design values ≥75 percent of the maximum design value.

The modeling was also used to determine locations where elevated SO_2 concentrations are expected to occur most frequently given that the site selection process also needs to account for the frequency with which an area sees the daily maximum concentration.[2] Normally this involves counting the number of times each receptor sees the daily maximum 1-hour SO_2 concentration predicted by the model. However, the QAPP looks at it differently, counting instead the number of times the daily maximum 1-hour SO_2 concentration at each receptor exceeds 75 percent of the maximum modeled design value. Figure 3, which is reproduced from the QAPP,[3] shows the number of daily maximum 1-hour SO_2 concentrations at each receptor that exceed 75 percent of the maximum modeled design value.

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[2] *Id.* at A-6.

[3] See Appendix 10, Figure 6, "Counts of Max Daily 1-Hour Concentrations Greater Than 75% of the Max Modeled Design Value* (Years 2005-2009)."

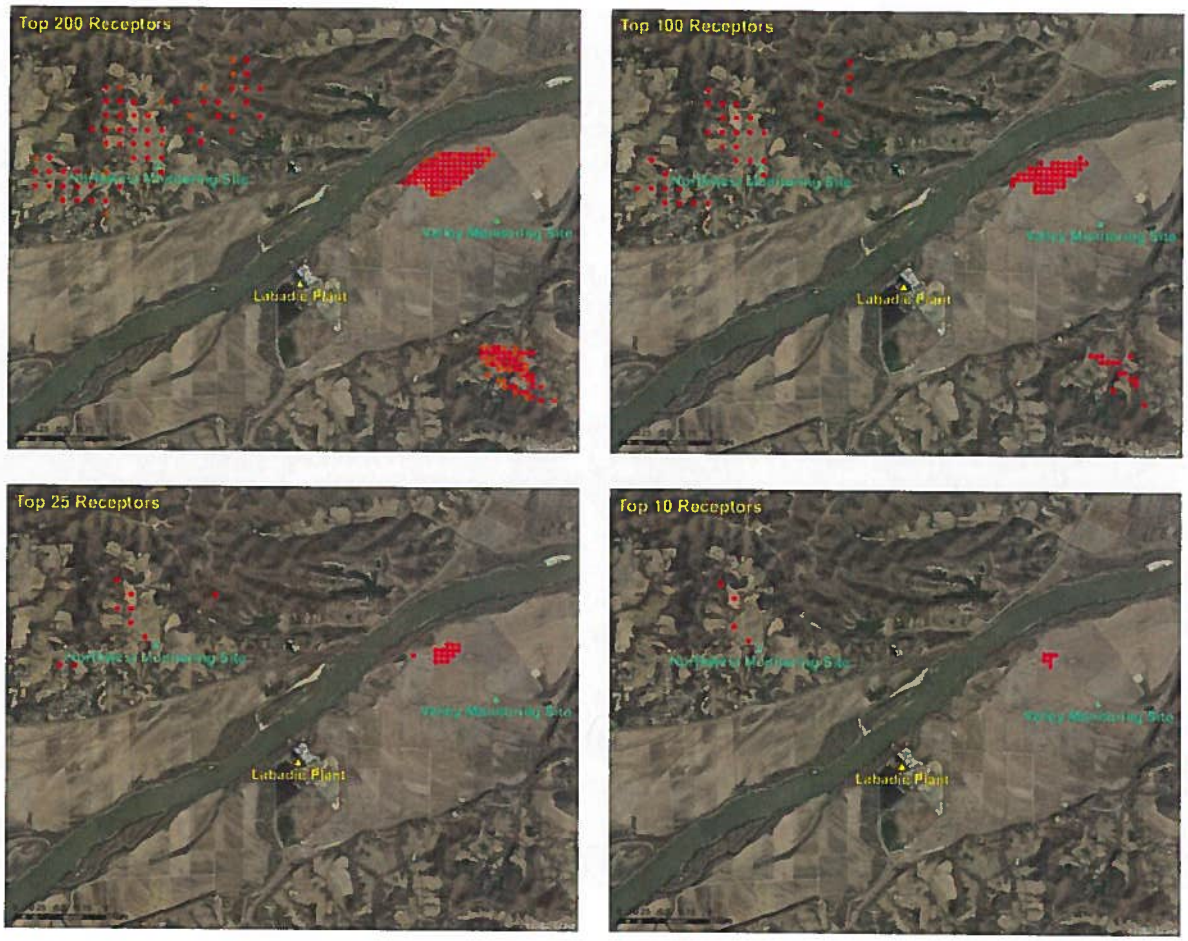

Figure 2. Receptors with the top 200, 100, 25, and 10 modeled design values.

Figures 1 and 2 reveal three distinct areas where modeled design values are in excess of 95 percent of the maximum modeled design value and where the majority of the top 200 receptors (and all of the top 100, 25 and 10 receptors) lie. These areas, located northwest, northeast, and southeast of the Labadie Energy Center, are where the modeling predicts peak 1-hour SO_2 concentrations are expected to occur. Furthermore, although a rigorous comparison is not possible without detailed receptor data, a simple visual comparison of Figures 1 and 3 indicates that the areas where peak 1-hour SO_2 concentrations are expected to occur (i.e., where modeled design values are in excess of 95 percent of the maximum modeled design value) overlap with the areas where daily maximum 1-hour SO_2 concentrations most frequently exceed 75 percent of the maximum modeled design value. Monitoring stations located in these areas would have the greatest chance of identifying peak SO_2 concentrations in ambient air, which is the primary objective of source-oriented monitoring and an absolute necessity when monitoring to assess compliance with the NAAQS.

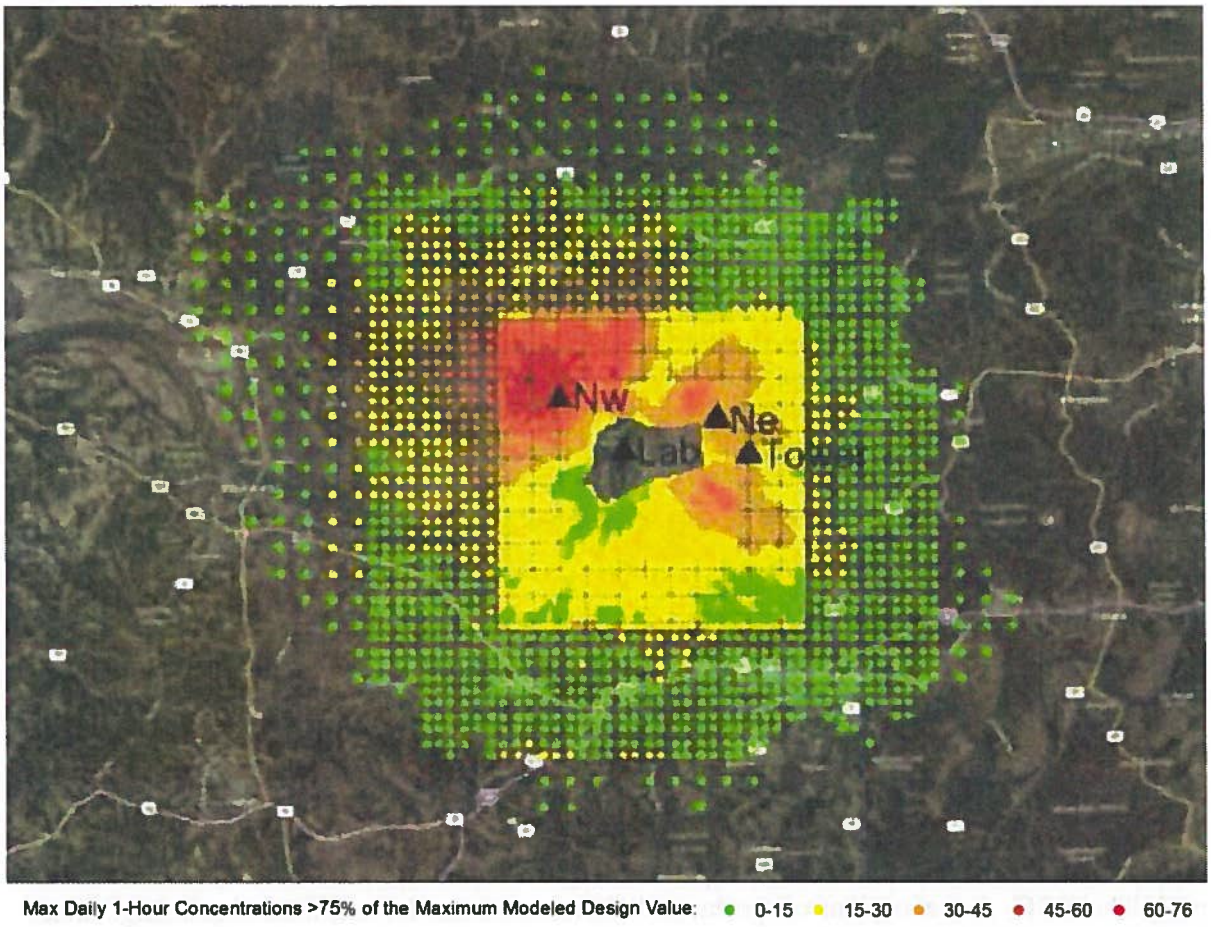

Figure 3. Number of maximum daily 1-hour SO_2 concentrations at each receptor that exceed 75 percent of the maximum modeled design value.

However, only one of Ameren's proposed monitoring sites, the northwest site, is located in one of the three peak concentration/high frequency areas predicted by the modeling (the one located northwest of the plant). No monitoring sites are proposed in the peak concentration/high frequency areas located northeast or southeast of the plant. Instead, Ameren's only other proposed monitoring site, the valley site, is located in an area where modeled design values are only about 80 percent of the maximum modeled design value and where daily maximum 1-hour SO_2 concentrations exceed 75 percent of the maximum modeled design value about half as often as they do in areas where this occurs with the greatest frequency. This makes the valley site an inappropriate site for a monitor to assess compliance with the NAAQS. Ameren's modeling predicts that ambient SO_2 concentrations will be as much as 25 percent higher in several areas around the plant than they will be at the valley site, meaning a monitoring station at the valley site could be in compliance with the NAAQS while significant violations were occurring nearby.

The QAPP states that a monitor could not be sited in the peak concentration/high frequency area northeast of the plant because it is an actively farmed area, physical access is almost impossible

without building additional infrastructure, and electric power is not available. These justifications do not stand up to the barest scrutiny. The entire Labadie Bottoms is an actively farmed area, accessible only by unimproved roads that severely limit vehicular access during wet weather conditions. As such, the proposed valley monitoring site is no more accessible than a site within the peak concentration/high frequency area northeast of the plant would be, and additional road infrastructure will likely be necessary for all-weather access regardless of where in the Labadie Bottoms the monitor is located.[4] Furthermore, electric power is not available anywhere within the Labadie Bottoms, including at the proposed valley monitoring site. Therefore, distribution infrastructure will have to be built to deliver power to any monitoring site in the Labadie Bottoms regardless of where it is located. The St. Albans Water and Sewer Authority/Franklin County PWSD #3 wastewater treatment facility, located approximately 1 kilometer east of the proposed valley monitoring site, appears to be the closest available source of electric power for monitoring sites in the Labadie Bottoms, and only a minimal amount of additional line would be necessary to deliver power to a monitor located in the peak concentration/high frequency area northeast of the plant compared to one located at the proposed valley monitoring site.

The QAPP's justification for not siting a monitor in the peak concentration/high frequency area southeast of the plant is equally flimsy. The QAPP states that the primary reason a monitor is not proposed in that area – despite the model predicting high design values and a high number of daily maximum 1-hour SO_2 concentrations in excess of 75 percent of the maximum modeled design value in that area – is because the elevated terrain there is similar to the terrain at the proposed northwest monitoring site and it was believed an additional elevated terrain site was not necessary. However, AERMOD accounts for terrain influences when calculating modeled design values, and variations in meteorological parameters, most notably wind direction, often result in peak 1-hour SO_2 concentrations occurring in different areas that have similar terrain (e.g., areas in different cardinal directions from the source). Therefore, the peak concentration/high frequency area southeast of the plant cannot be ignored simply because the terrain there is similar to the terrain in the peak concentration/high frequency area northwest of the plant. The purpose of an ambient SO_2 monitoring network is not to monitor different terrain types, but to monitor areas where peak 1-hour SO_2 concentrations are expected to occur regardless of the terrain in those areas. The QAPP also suggests that the high concentrations and frequencies predicted by the model southeast of plant are merely an artifact of the Jefferson City, MO Airport meteorology, which is influenced by the local orientation of the Missouri River valley at that met station. However, the wind roses provided in the QAPP for a number of met stations in eastern Missouri that are closer to Labadie, which the QAPP states better reflect the expected meteorology at Labadie, all show significant winds from the north or northwest, which is consistent with an area of peak concentration/high frequency southeast of the plant.

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[4] The peak concentration/high frequency area northeast of the plant is arguably more accessible than the proposed valley monitoring site given its proximity to the agricultural levee adjacent to the south bank of the Missouri River. The road on the crest of this levee is higher and most likely drier than other unimproved roads in the Labadie Bottoms, including those roads leading to the proposed valley monitoring site.

II. The Modeling Described in the QAPP Does Not Comport With EPA's Source-Oriented SO_2 Monitoring Guidance and Therefore May Not Correctly Identify Areas of Expected Ambient, Ground-Level SO_2 Concentration Maxima

EPA's SO_2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document (TAD) provides guidance on how to "appropriately and sufficiently monitor ambient air in areas proximate to or impacted by an SO_2 emissions source to create ambient monitoring data for comparison to the SO_2 NAAQS" and presents "recommended steps to aid in identifying source-oriented SO_2 monitor sites."[5] The modeling described in the QAPP fails to adhere to the TAD in one critical respect: it does not use hourly emission rates, which are readily available for Labadie's boilers from EPA's online Air Markets Program Data tool. Instead it uses constant emission rates, which the QAPP states were "selected to produce rational ambient levels to be used for establishing monitoring locations and does not reflect actual emissions." The consequence of using constant rather than hourly emission rates is that the effects of the interaction between hourly emissions and hourly variations in meteorological parameters is ignored completely, so that the predicted areas of peak concentration and/or high frequency are primarily a function of the meteorology used. For example, if peak hourly emissions coincide with times when strong winds blow from a direction other than the prevailing wind direction, a model that uses hourly emission rates might predict high concentrations in different areas than the same model would predict using constant emission rates. Therefore, using hourly emissions allows the areas where peak 1-hour SO_2 concentrations are expected to occur to be determined with greater confidence.

III. DNR Should Not Deprive The Public and EPA of an Opportunity to Participate in the Monitoring Site Selection Process.

While the area around the Labadie plant will necessarily be evaluated for nonattainment designation purposes based on modeling in order to meet the July 2016 deadline set by *Sierra Club et al. v. McCarthy*, Civil Action No. 3:13–cv–3953–SI (N.D. Cal., March 2, 2015), it is difficult to imagine why DNR and Ameren would agree to install monitoring sites near the Labadie plant unless they expect to consider using the results for future NAAQS compliance evaluations. Monitoring sites used for such purposes must be included in the state's monitoring network plan, which must be proposed by DNR after public notice and the opportunity for public comment, and submitted to EPA for its review and approval. 40 CFR § 58.10.

Contrary to these requirements, DNR has been working with Ameren to select the Labadie monitoring sites and allow Ameren to commence monitoring at these inappropriate locations without public notice and opportunity for public comment, and without submitting the plans to EPA for its review and approval. Documents obtained recently from DNR suggest that Ameren is already preparing to construct the monitoring sites identified in the Labadie QAPP. In addition, the Consent Agreement attached as Appendix J to the proposed Jefferson County State Implementation Plan requires Ameren to submit "final network site recommendations" to DNR regarding the Rush Island plant by May 1, 2015, with equipment to be installed and calibrated by

[5] U.S. EPA, SO_2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document, at 2.

December 31, 2015 – with no provisions for public comment or for EPA review and approval. Unlike Labadie, where Ameren has provided documentation to DNR as to its (flawed) basis for monitoring site selection, Ameren appears to be developing its "final network site recommendations" for Rush Island without the prior submission to DNR of modeling data to support the site selection.[6]

DNR should not approve monitoring locations for the Labadie or Rush Island plants without first providing public notice and opportunity for comment, and without submitting the proposed locations to EPA for its review and approval.

Conclusion

Based on the modeling described in the QAPP, Ameren's proposed valley monitoring site is improperly located in an area where peak 1-hour SO_2 concentrations are **not** expected to occur. Furthermore, Ameren has failed to propose monitoring sites in peak concentration/high frequency areas located northeast and southeast of the Labadie Energy Center, citing justifications that don't withstand the barest scrutiny, despite the facts that there are numerous private residences within the peak concentration/high frequency area southeast of the plant and the peak concentration/high frequency area northeast of the plant is situated between the nearby communities of St. Albans and Augusta Shores. Therefore, we urge DNR to disapprove the QAPP and require Ameren to make the following changes:

1) Relocate the proposed valley monitoring site to the peak concentration/high frequency area northeast of the plant; and
2) Add a third monitoring site in the peak concentration/high frequency area southeast of the plant.

We also urge DNR to require Ameren to rerun the air dispersion model described in the QAPP using hourly emission rates in order to determine whether the model correctly identified the areas of expected ambient, ground-level SO_2 concentration maxima around the plant and to require a wholesale reevaluation of potential monitoring sites if the model used for the QAPP failed to correctly identify such areas.

Finally, we urge DNR to provide public notice and opportunity for comment, and to submit the proposed monitoring locations to EPA for its review and approval, in accordance with 40 CFR Part 58.

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[6] On behalf of the Sierra Club, the Clinic has submitted Sunshine Law requests for documents related to possible SO_2 monitoring at Labadie and Rush Island. The most recent request to which DNR has responded (submitted on February 19, 2015, with responsive documents provided April 2, 2015), requested: "All documents regarding the possible installation of SO_2 monitors at the Labadie and/or Rush Island power plants, including but not limited to Quality Assurance Project Plans and all related documents, and all AERMOD input and output files used in any modeling analysis performed to determine the locations of any proposed SO_2 monitoring sites." As of DNR's latest response (April 2, 2015), it has not provided any documents discussing or attempting to justify the selection of possible modeling sites at the Rush Island plant.

Respectfully submitted,

Maxine I. Lipeles

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On behalf of the Sierra Club

Cc: Rebecca Weber, Director, Air & Waste Management Division, EPA Region 7
Josh Tapp, Chief, Air Planning & Development Branch, EPA Region 7
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May 29, 2015

Ms. Patricia Maliro
Chief, Air Quality Monitoring Unit
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P.O. Box 176
Jefferson City, MO 65102-0176
Via email to patricia.maliro@dnr.mo.gov

Re: Comments on Ameren Missouri's Analysis of SO_2 and Meteorological Monitoring Stations Around Its Rush Island Energy Center

Dear Ms. Maliro:

On behalf of the Sierra Club, we submit the following comments on the report by Ameren Missouri titled Analysis of SO_2 and Meteorological Monitoring Stations Around Ameren Missouri's Rush Island Energy Center (Ameren's Monitoring Stations Analysis), which it submitted to DNR on or about April 29, 2015. The report describes the methodology Ameren used to determine the locations of three proposed ambient SO_2 monitoring stations and one meteorological monitoring station around its Rush Island Energy Center in Jefferson County, Missouri. Pursuant to a March 23, 2015 Consent Agreement with DNR, Ameren is required to install and begin operation of an SO_2 monitoring network around the Rush Island plant on or before December 31, 2015.

We believe Ameren's proposed monitoring sites should be rejected because they are located outside areas where peak 1-hour SO_2 concentrations are expected to occur based on the modeling described in Ameren's report. Furthermore, the modeling described in the report does not comport with EPA guidance on characterizing ambient air quality in areas around or impacted by significant SO_2 emission sources such as the Rush Island Energy Center and therefore may have failed to correctly identify areas of expected ambient, ground-level SO_2 concentration maxima. We also have concerns regarding the appropriateness of the meteorological data used in the modeling.

I. Based on the Modeling Described in Ameren's Report, the Proposed Monitoring Sites are Located Outside Areas Where Peak 1-Hour SO_2 Concentrations are Expected to Occur

The Consent Agreement (Appendix 1, ¶b) requires that "the number and location of SO_2 monitors and meteorological station(s) shall ensure that the approved SO_2 monitoring network represents ambient air quality in areas of maximum SO_2 impact from the Rush Island Energy Center." Ameren's Monitoring Stations Analysis (p. 3) describes the modeling it performed to

"delineate areas where maximum concentrations are expected to occur for this type of source and thus where SO_2 monitoring systems should be placed."

Unfortunately, the monitoring sites proposed by Ameren are not, in fact, located in "areas of maximum SO_2 impact from the Rush Island Energy Center," as required by the Consent Agreement.

Figures 1 through 4 below show the results of Ameren's modeling, which we derived using model input files provided by DNR. Figure 1 shows modeled SO_2 design values in the vicinity of the plant; Figure 2 shows receptors with modeled design values greater than or equal to 75 percent of the maximum modeled design value (146.1 ug/m^3); Figure 3 shows the number of times the model-derived maximum daily 1-hour concentration exceeded 75 percent of the maximum modeled design value at each receptor; and Figure 4 shows the receptors with the top 200, 100, 25, and 10 modeled design values. The locations of the plant and the proposed Fults, Natchez, and Weaver-AA SO_2 monitoring stations and the proposed Tall Tower meteorological monitoring station are shown on all figures for reference.

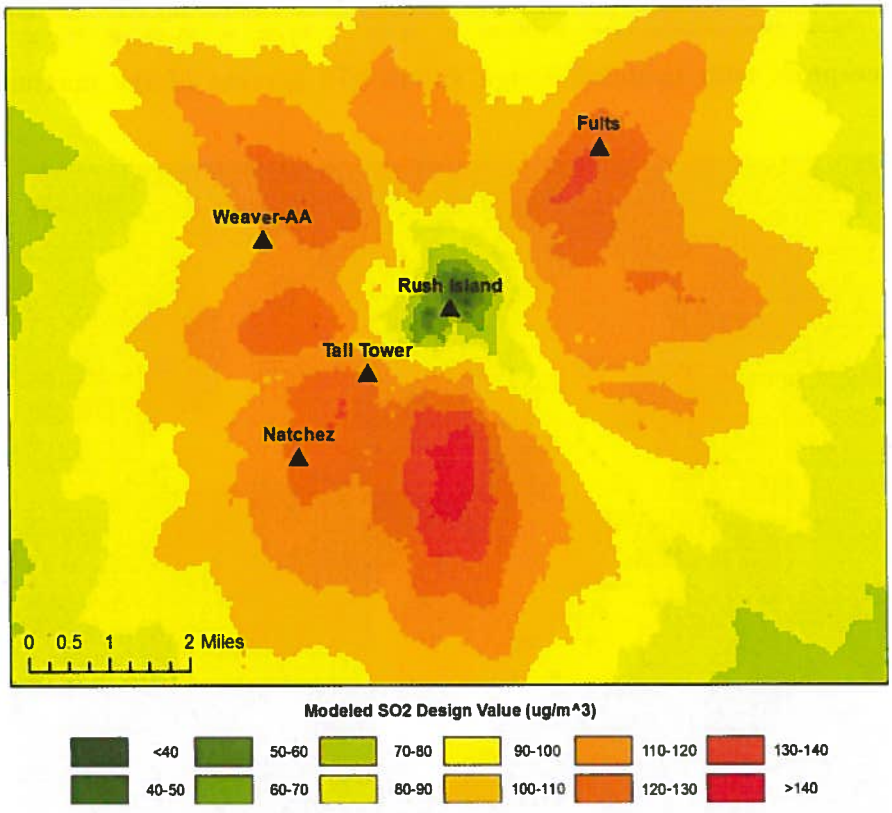

Figure 1. Modeled SO_2 design values in the vicinity of the Rush Island Energy Center.

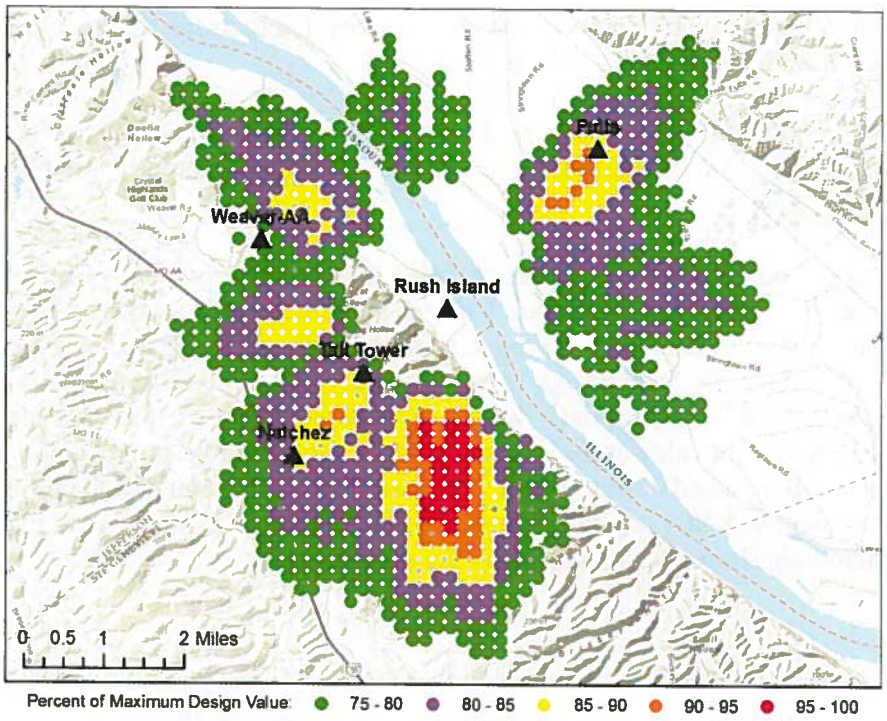

Figure 2. Receptors with modeled design values ≥75 percent of the maximum modeled design value.

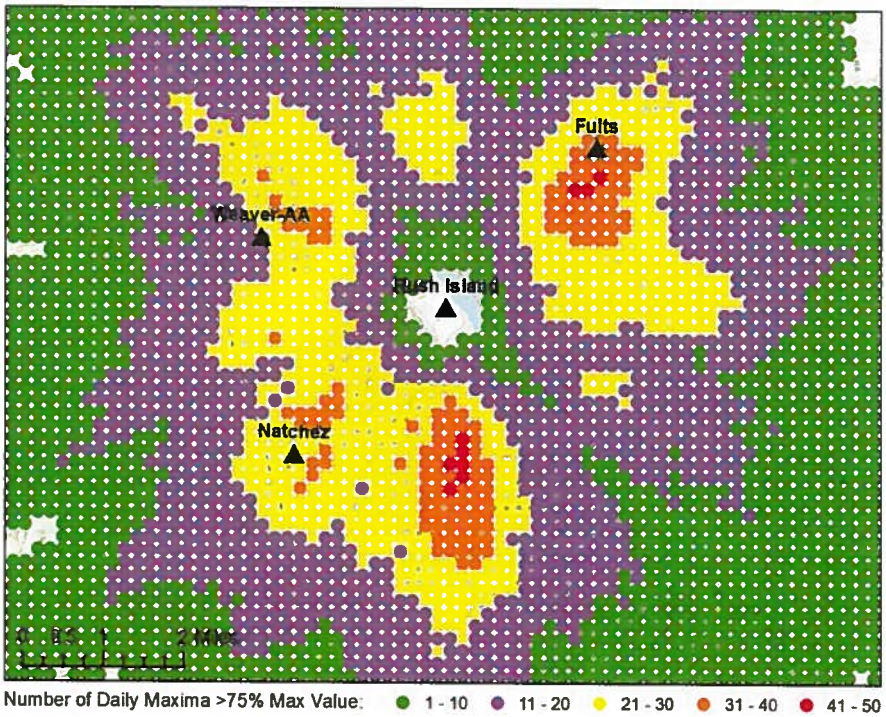

Figure 3. Number of maximum daily 1-hour concentrations ≥75 percent of the maximum modeled design value.

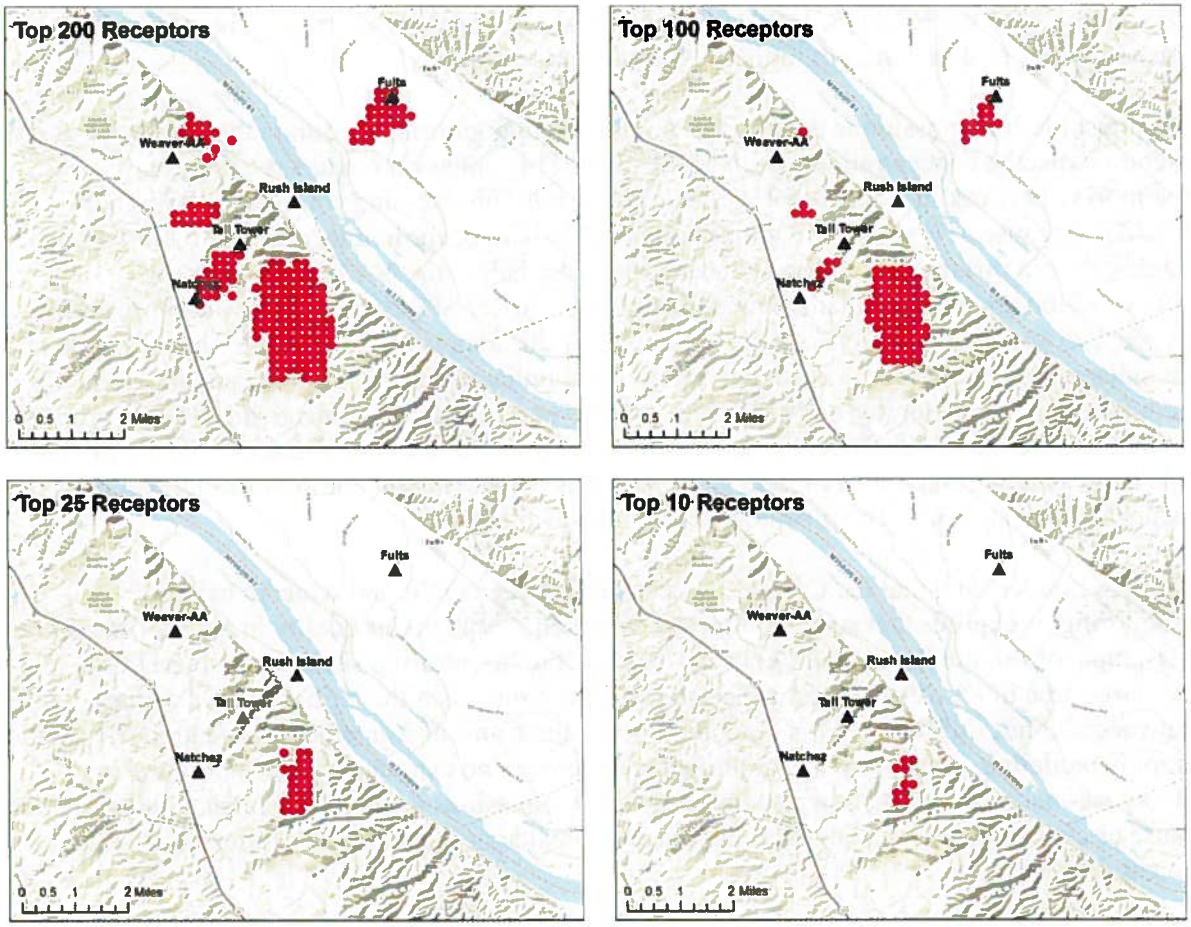

Figure 4. Receptors with the top 200, 100, 25, and 10 modeled design values.

Figures 1 through 4 all reveal a strikingly similar pattern regarding the areas where peak 1-hour SO_2 concentrations are expected to occur around the Rush Island Energy Center. There is a large area due south of the plant where modeled design values are the highest (in excess of 95 percent of the maximum modeled design value), where modeled maximum daily 1-hour concentrations frequently exceeded 75 percent of the maximum modeled design value, and where over half of the top 200 receptors (including all of the top 25 and three quarters of the top 100) are located. There are also four other areas where modeled design values are slightly lower but still very high (in excess of 85 percent of the maximum modeled design value), where modeled maximum daily 1-hour concentrations frequently exceeded 75 percent of the maximum modeled design value, and where the rest of the top 200 receptors are located. These four areas, located northeast, northwest, west, and southwest of the plant, plus the area south of the plant where modeled design values are the highest, are where Ameren's modeling predicts peak 1-hour SO_2 concentrations are expected to occur. Monitoring stations located in these areas would have the greatest chance of identifying peak SO_2 concentrations in ambient air, which is the primary objective of source-oriented monitoring and an absolute necessity when monitoring to assess

compliance with the NAAQS. However, none of Ameren's proposed monitoring stations is located in any of these areas of highest expected concentrations.

The most glaring omission is that there is no proposed monitoring station in the large area of highest expected concentrations south of the plant. This omission renders the proposed monitoring network inadequate for its intended purpose of assessing compliance with the NAAQS because a) NAAQS violations are most likely to occur in this area, and b) violations could occur in this area even when concentrations are below the NAAQS in other high concentration areas, given that the modeling predicts lower SO_2 concentrations in those areas. Ameren's Monitoring Stations Analysis claims that this area is "not accessible" because it hosts an industrial plant (Holcim). The Analysis does not indicate whether Ameren sought Holcim's permission to site a monitor on the Holcim property, and does not delineate the Holcim property boundary in terms of the modeling results. In other words, it does not document the claim that this large area of maximum expected concentrations is inaccessible for monitoring. Nor does it evaluate the nearest non-Holcim site that might be available.

While we understand that the Consent Agreement between DNR and Ameren calls for monitoring, it requires that such monitoring "represents ambient air quality in areas of maximum SO_2 impact from the Rush Island Energy Center." If no monitoring site is in fact accessible in this large area of the very highest expected concentrations, then the proposed monitoring network will not fulfill Ameren's obligation under the Consent Agreement. Instead, DNR should employ modeling, which provides 360-degree coverage and can predict concentrations at otherwise-inaccessible locations, to ensure that SO_2 emissions from the Rush Island plant do not cause or contribute to NAAQS exceedances either inside or outside of the Jefferson County nonattainment area.

Furthermore, two of the proposed monitoring stations – Fults and Natchez – are located near but outside of areas of modeled peak concentration/high frequency instead of near the center of such areas, where concentrations are expected to be higher. The third proposed station – Weaver-AA – is located entirely outside of modeled peak concentration/high frequency areas. Figure 5 shows the locations of the proposed monitoring stations on a hybrid basemap comprised of Figures 1 (modeled design values) and 2 (receptors with modeled design values $\geq$75 percent of the maximum design value). Receptors that are among the 200 with the highest modeled design values are outlined for reference. All three monitoring stations could easily be sited in areas where higher 1-hour SO_2 concentrations are expected to occur with greater frequency, thereby increasing their chances of detecting any NAAQS exceedances that might occur around the Rush Island Energy Center. As discussed below, we urge DNR to consider these proposed optimized locations in lieu of Ameren's proposed Fults, Natchez, and Weaver-AA locations.

Fults – Of the three proposed monitoring stations, the Fults monitoring station is closest to an area where peak 1-hour SO_2 concentrations are expected to occur. However, moving the monitor less than one kilometer southwest of its current location would move it from an area with modeled design values in the 120-130 ug/m^3 range to an area with modeled design values in the 130-140 ug/m^3 range and place it near the center of a small group of receptors with modeled design values equal to 90-95 percent of the maximum modeled design value (the receptors

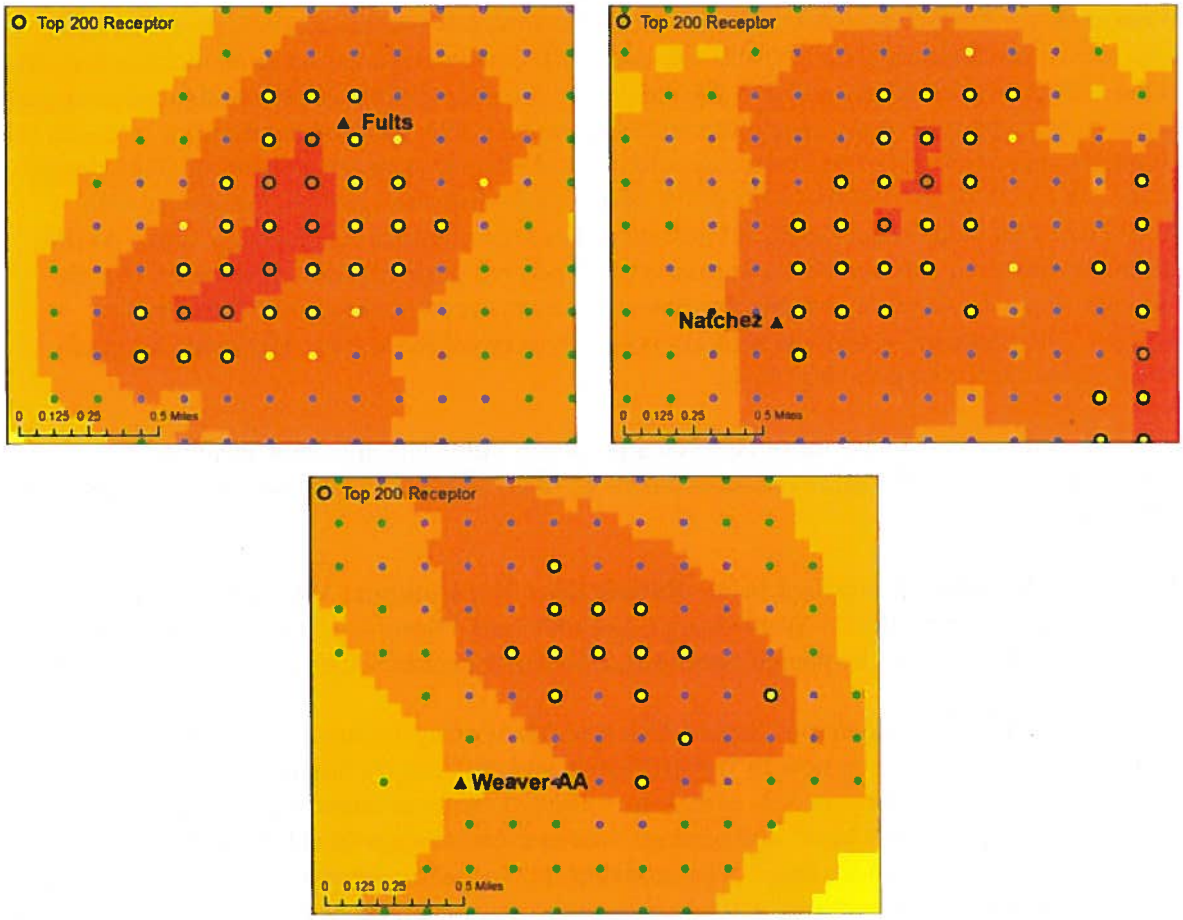

Figure 5. Modeled design values, receptors with design values ≥75 percent of the maximum modeled design value, and proposed monitoring station locations.

surrounding its current location generally have modeled design values equal to 85-90 percent of the maximum modeled design value). The entire area is floodplain/agricultural and Ivy Road, oriented northeast-southwest, runs through the middle of it, making the proposed optimized location as accessible as Ameren's proposed location and equally easy to provide power to.

Natchez – The Natchez monitoring station is outside/on the outer edge of an area where peak 1-hour SO_2 concentrations are expected to occur. Moving it approximately one kilometer northeast of its current location would move it from an area with modeled design values in the 120-130 ug/m^3 range to an area with modeled design values in the 130-140 ug/m^3 range, and place it between a pair of receptors with modeled design values equal to 90-95 percent of the maximum modeled design value (the receptors surrounding its current location have modeled design values equal to 80-90 percent of the maximum modeled design value). It would also move it to an area where higher concentrations are expected to occur with slightly greater frequency. The proposed optimized location is accessible via transmission right of way, and power is available along Dubois Creek Road to the south-southwest.

Weaver-AA – The Weaver-AA station is located completely outside of all areas where peak 1-hour SO2 concentrations are expected to occur. Modeled design values at its location are only in the 100-110 ug/m^3 range, and it is surrounded by receptors with modeled design values equal to just over 75 percent of the maximum modeled design value. Moving the monitor just over one kilometer east-northeast of its current location would place it in an area where modeled design values are 15-20 ug/m^3 higher, in the midst of a slightly dispersed group of receptors with modeled design values equal to 85-90 percent of the maximum modeled design value. At this optimized location, concentrations in excess of 75 percent of the maximum modeled design value are expected to occur roughly twice as often as at Ameren's proposed Weaver-AA location. The proposed optimized location is readily accessible via State Highway AA, and power is available along the highway.

Figure 6 compares the locations of Ameren's proposed Fults, Natchez, and Weaver-AA monitoring stations with optimized locations more likely to record maximum SO_2 concentrations in the area.

II. The Modeling Described in the Report Does Not Comport With EPA's Source-Oriented SO_2 Monitoring Guidance and Therefore May Not Correctly Identify Areas of Expected Ambient, Ground-Level SO_2 Concentration Maxima

EPA's SO_2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document (TAD) provides guidance on how to "appropriately and sufficiently monitor ambient air in areas proximate to or impacted by an SO_2 emissions source to create ambient monitoring data for comparison to the SO_2 NAAQS" and presents "recommended steps to aid in identifying source-oriented SO_2 monitor sites."[1] The modeling performed to determine the locations of the proposed ambient SO_2 monitoring stations around the Rush Island Energy Center fails to adhere to the TAD in two important respects: 1) it does not use hourly emission rates, which are readily available for Rush Island's boilers from EPA's online Air Markets Program Data tool; and 2) it does not include nearby sources that may contribute significantly to ambient SO_2 concentrations in the vicinity of the plant and therefore should be included in the modeling.

EPA suggests using hourly emissions when available in order to represent the variability of actual emissions as accurately as possible,[2] which is important given the short-term nature of the SO_2 NAAQS. However, instead of using readily-available hourly emissions as recommended by EPA's monitoring TAD, Ameren's modeling uses constant emission rates for Rush Island's boilers. The consequence of using constant rather than hourly emission rates is that the effects of the interaction between hourly emissions and hourly variations in meteorological parameters are not captured by the model, so that the predicted areas of peak concentration are primarily a function of the meteorology used. For example, if peak hourly emissions coincide with times when strong winds blow from a direction other than the prevailing wind direction, a model that uses hourly emission rates might predict peak concentrations in different areas than the same

[1] U.S. EPA, SO_2 NAAQS Designations Source-Oriented Monitoring Technical Assistance Document, Dec. 2013 Draft, at 2, available at http://epa.gov/airquality/sulfurdioxide/pdfs/SO2MonitoringTAD.pdf.

[2] *Id.* at 11, referencing U.S. EPA, SO_2 NAAQS Designations Modeling Technical Assistance Document, Dec. 2013 Draft, at 10, available at http://epa.gov/airquality/sulfurdioxide/pdfs/SO2ModelingTAD.pdf.

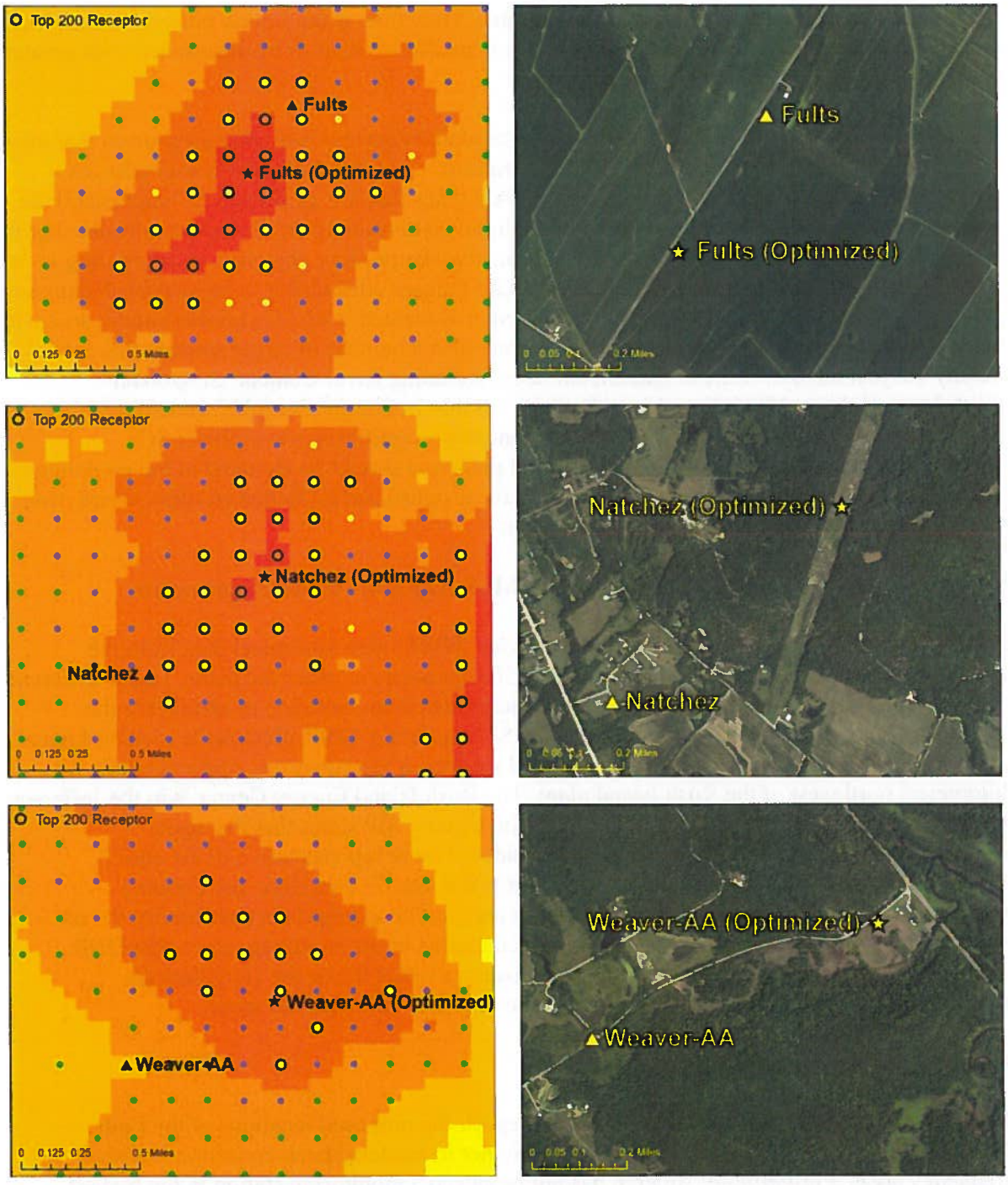

Figure 6. Current and optimized locations of the Fults, Natchez, and Weaver-AA monitoring stations

model would predict using constant emission rates. Therefore, using hourly emissions allows the areas where peak 1-hour SO_2 concentrations are expected to occur to be determined with greater confidence.

Regarding which sources to model, EPA suggests identifying and including all sources that may contribute significantly to ambient SO_2 concentrations – and thus to NAAQS exceedances – around the source of interest. The monitoring TAD notes that it is important to "understand the setting and surroundings of the SO_2 source" including determining "if the source is isolated or in an area with multiple SO_2 sources," and it affirms that the primary objective of monitoring is "to identify peak SO_2 concentrations in the ambient air that are attributable to an identified source *or group of sources.*"[3] The Rush Island Energy Center is located in an SO_2 nonattainment area with numerous sources of varying magnitude. There are also a number of larger sources that are nearby but just outside of the nonattainment area, including River Cement, St. Gobain Containers, Holcim, Mississippi Lime, Dynegy's Baldwin Energy Complex, and Ameren's Meramec Energy Center. These sources may contribute significantly to ambient SO_2 concentrations in the vicinity of the Rush Island plant and should be included in the modeling unless it can be demonstrated that they do not have a significant influence on areas where peak 1-hour SO_2 concentrations are expected to occur.

III. The Meteorological Data Used in the Modeling May Not be Appropriate

Ameren's modeling uses National Weather Service (NWS) meteorological data from the Cahokia, Illinois airport located approximately 50 kilometers north of the plant. This is different from the meteorological data DNR used in its attainment demonstration modeling for the Jefferson County SO_2 nonattainment SIP. In its SIP modeling, DNR used onsite meteorological data from the now-closed Doe Run primary lead smelter in Herculaneum, approximately 18 kilometers northwest of the Rush Island plant. The Rush Island Energy Center is in the Jefferson County SO_2 nonattainment area, and the Jefferson County SIP states that the onsite meteorological data from Herculaneum is "considered more representative of the entire [nonattainment] area compared to a more distant NWS site."[4] Therefore, the Cahokia meteorological data used in Ameren's modeling may not be appropriate, particularly if – as suggested above – other nearby SO_2 sources are included in the modeling, given that DNR determined – based on the distribution of these sources – that the onsite Herculaneum meteorological data is more representative of the area that encompasses them.

Conclusion

Based on the modeling described in Ameren's report, the proposed locations of the Fults, Natchez, and Weaver-AA monitoring stations are not in modeled peak concentration/high frequency areas. Furthermore, Ameren has not proposed a monitoring station in the highest concentration area due south of the Rush Island Energy Center, citing the claimed but not

[3] *Id.* at 2, 4 (emphasis added).

[4] DNR, Nonattainment Plan for the 2010 1-Hour Sulfur Dioxide National Ambient Air Quality Standard, Jefferson County Sulfur Dioxide Nonattainment Area, May 28, 2015, at 26.

documented inaccessibility of potential monitoring sites in that area. The absence of a monitor in this large area of expected maximum concentration calls into question whether the proposed SO_2 monitoring network is an appropriate means of assessing compliance with the NAAQS in the area around the plant.

Ameren's proposed monitoring network does not fulfill its requirement under the Consent Agreement to install a monitoring network designed to record maximum expected SO_2 concentrations in the vicinity of the Rush Island plant. Nor is it designed to achieve Ameren's purported goal of obtaining "a good quality data set with representative SO_2 measurements and meteorological information"[5] or DNR's stated goal "to true-up modeling results further away from the Mott Street monitor … to confirm our assessment that the nonattainment area is in compliance with the 1-hour SO2 standard farther away from the violating monitor."[6]

We urge DNR to reject the proposed monitoring sites and require Ameren to add a monitoring station in the highest concentration area due south of the plant as well as to relocate the proposed Fults, Natchez, and Weaver-AA monitoring stations to the optimized locations shown in Figure 5. We also urge DNR to require Ameren to 1) rerun the air dispersion model described in the report using Rush Island's actual hourly emissions; 2) evaluate the effects of nearby interactive sources (including, at a minimum, River Cement, St. Gobain Containers, Holcim, Mississippi Lime, Dynegy's Baldwin Energy Complex, and Ameren's Meramec Energy Center) on modeled peak concentration/high frequency areas; and 3) evaluate the appropriateness of using meteorological data from the Cahokia, Illinois airport instead of Doe Run Herculaneum given DNR's determination that the latter is more representative of the modeled area.[7] We further urge DNR to require any necessary adjustments to the proposed monitoring network based on the results of these analyses.

Respectfully submitted,

Maxine I. Lipeles

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Ken Miller, P.G.
Interdisciplinary Environmental Clinic
Washington University School of Law

On behalf of the Sierra Club

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[5] DNR, Comments and Responses on Proposed Revision to Missouri State Implementation Plan – Nonattainment Plan for the 2010 1-Hour Sulfur Dioxide National Ambient Air Quality Standard – Jefferson County Sulfur Dioxide Nonattainment Area, Comment #21, p. 10, available at http://dnr.mo.gov/env/apcp/docs/comments-and-responses-jeffco.pdf.

[6] *Id.*, Response to Comment #4, p. 3.

[7] This analysis should consider and make use of the corrected Herculaneum meteorological data set processed in AERMET with the Bulk Richardson Number option invoked.

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Kyra Moore, Director, Air Pollution Control Program, DNR
Wendy Vit, Chief, Air Quality Planning Section, Air Pollution Control Program, DNR